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2009

### Nebraska Summary: S735 Case-IH Farmall 85U

Nebraska Tractor Test Laboratory

*University of Nebraska-Lincoln*, [tractortestlab@unl.edu](mailto:tractortestlab@unl.edu)

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# SUMMARY OF OECD TESTS 2501 & 2503 — NEBRASKA SUMMARY 735

## CASE IH FARMALL 85U DIESEL

### 12 SPEED

#### POWER TAKE-OFF PERFORMANCE-2WD

Power HP (kW)	Crank shaft speed rpm	Gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Mean Atmospheric Conditions
MAXIMUM POWER AND FUEL CONSUMPTION					
Rated Engine Speed (PTO speed—566 rpm)					
68.3 (50.9)	2300	4.81 (18.19)	0.493 (0.300)	14.21 (2.80)	
Standard Power Take-off speed (540 rpm)					
70.9 (52.9)	2195	4.69 (17.74)	0.464 (0.282)	15.13 (2.98)	
Maximum Power (1 hour)					
73.2 (54.6)	2000	4.42 (16.74)	0.424 (0.258)	16.55 (3.26)	

#### VARYING POWER AND FUEL CONSUMPTION

68.3 (50.9)	2300	4.81 (18.19)	0.493 (0.300)	14.21 (2.80)	Air temperature
61.8 (46.1)	2461	4.92 (18.63)	0.558 (0.339)	12.57 (2.48)	64°F (18°C)
47.1 (35.1)	2476	4.19 (15.85)	0.625 (0.380)	11.23 (2.21)	Relative humidity
31.3 (23.3)	2491	3.44 (13.01)	0.770 (0.468)	9.10 (1.79)	33%
15.8 (11.8)	2509	2.79 (10.55)	1.240 (0.754)	5.65 (1.11)	Barometer
--	2531	2.24 (8.49)	--	--	29.0" Hg (98.1 kPa)

Maximum torque -271.5 lb.-ft. (368.1 Nm) at 902 rpm

Maximum torque rise -74.3%

Torque rise at 1800 engine rpm -35%

#### POWER TAKE-OFF PERFORMANCE - FWA

Power HP (kW)	Crank shaft speed rpm	Gal/hr (l/h)	lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Mean Atmospheric Conditions
MAXIMUM POWER AND FUEL CONSUMPTION					
Rated Engine Speed (PTO speed—566 rpm)					
71.1 (53.0)	2300	4.85 (18.37)	0.478 (0.291)	14.67 (2.89)	
Standard Power Take-off speed (540 rpm)					
72.8 (54.3)	2196	4.73 (17.92)	0.455 (0.277)	15.38 (3.03)	
Maximum Power (1 hour)					
74.6 (55.6)	2000	4.45 (16.83)	0.418 (0.255)	16.75 (3.30)	

#### VARYING POWER AND FUEL CONSUMPTION

71.1 (53.0)	2300	4.85 (18.37)	0.478 (0.291)	14.67 (2.89)	Air temperature
64.0 (47.7)	2456	4.88 (18.46)	0.535 (0.325)	13.11 (2.58)	68°F (20°C)
48.5 (36.2)	2472	3.97 (15.04)	0.574 (0.349)	12.20 (2.40)	Relative humidity
32.7 (24.4)	2486	3.34 (12.64)	0.714 (0.434)	9.82 (1.93)	32%
16.2 (12.1)	2508	2.61 (9.88)	1.125 (0.684)	6.23 (1.23)	Barometer
--	2531	2.16 (8.17)	--	--	29.4" Hg (99.5 kPa)

Maximum torque -270.2 lb.-ft. (366.4 Nm) at 902 rpm

Maximum torque rise -66.5%

Torque rise at 1800 engine rpm -30%

**Location of tests:** Istituto per le Macchine e Movimento Terra 73, Strada delle Cacce, 10135 Torino, Italy

**Dates of tests:** January to March, 2009

**Manufacturer:** CNH Italia SpA, Via Leone XIII, 160035, Jesi, Italy

**FUEL and OIL:** Fuel No. 2 Diesel **Specific gravity converted to 60°/60°F (15°/15°C)** 0.842 **Fuel weight** 7.01 lbs/gal (0.840 kg/l) **Oil** SAE 15W40 **API service classification** CH-4 **Transmission and hydraulic lubricant** Akcela Nexplore fluid **Front axle lubricant** Akcela Nexplore fluid

**ENGINE:** Make CNH Diesel **Type** four cylinder vertical with turbocharger and air to air intercooler **Serial No.** 572987 **Crankshaft** lengthwise **Rated engine speed** 2300 **Bore and stroke** 4.094" x 5.197" (104.0 mm x 132.0 mm) **Compression ratio** 17.0 to 1 **Displacement** 274 cu in (4485 ml) **Starting system** 12 volt **Lubrication** pressure **Air cleaner** two paper elements **Oil filter** one full flow cartridge **Oil cooler** engine coolant heat exchanger for crankcase oil, radiator for hydraulic and transmission oil **Fuel filter** one paper element **Muffler** underhood **Exhaust** vertical **Cooling medium temperature control** thermostat

**CHASSIS:** **Type** 2WD & front wheel assist **Serial No.** Z8JL07488 **Tread width** rear 56.3" (1430 mm) to 89.0" (2260 mm), front 2WD - 55.4" (1407 mm) to 85.6" (2175 mm), FWA-60.1" (1526 mm) to 70.3" (1786 mm) **Wheel base** 2WD - 92.2" (2342 mm), FWA - 92.5" (2350 mm) **Hydraulic control system** direct engine drive **Transmission** selective gear fixed ratio **Nominal travel speeds mph(km/h)** first 1.16 (1.87) second 1.69 (2.72) third 2.44 (3.92) fourth 2.72 (4.37) fifth 3.49 (5.61) sixth 3.95 (6.35) seventh 5.69 (9.15) eighth 6.39 (10.28) ninth 8.15 (13.11) tenth 9.28 (14.94) eleventh 13.38 (21.54) twelfth 19.17 (30.85) reverse 1.14 (1.83), 1.65 (2.66), 2.39 (3.84), 2.66 (4.28), 3.42 (5.50), 3.87 (6.22), 5.57 (8.97), 6.26 (10.08), 7.98 (12.84), 9.10 (14.64), 13.12 (21.11), 18.79 (30.24) **Clutch** dual dry disc operated by foot pedal **Brakes** wet disc hydraulically operated by two foot pedals which can be locked together **Steering** hydrostatic **Power take-off** 540 rpm at 2198 engine rpm or 1000 rpm at 2261 engine rpm **Unladen tractor mass** 2WD - 8225 lbs (3730 kg), FWA - 9085 lb (4120 kg)

## FARMALL 85U - 2WD

(Unballasted)

### DRAWBAR PERFORMANCE

#### FUEL CONSUMPTION CHARACTERISTICS

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW.h/l)	Temp.°F (°C) cool- ing med	Air dry bulb	Barom. inch Hg (kPa)
<b>Maximum Power—7th(3 II)Gear</b>									
61.2 (45.6)	4110 (18.29)	5.58 (8.97)	2302	6.0	0.539 (0.328)	12.99 (2.56)	181 (83)	46 (8)	28.9 (97.8)
<b>75% of Pull at Maximum Power—7th(3 II)Gear</b>									
50.0 (37.3)	3075 (13.68)	6.10 (9.82)	2476	4.5	0.584 (0.355)	12.02 (2.37)	183 (84)	46 (8)	28.9 (97.8)
<b>50% of Pull at Maximum Power—7th(3 II)Gear</b>									
34.0 (25.3)	2065 (9.19)	6.17 (9.93)	2486	3.7	0.760 (0.463)	9.22 (1.82)	185 (85)	48 (9)	28.9 (97.8)
<b>75% of Pull at Reduced Engine Speed—8th(1 III) Gear</b>									
50.2 (37.5)	3085 (13.73)	6.10 (9.82)	2214	4.5	0.559 (0.340)	12.54 (2.47)	183 (84)	48 (9)	28.9 (97.8)
<b>50% of Pull at Reduced Engine Speed—8th(1 III) Gear</b>									
34.2 (25.5)	2080 (9.25)	6.17 (9.93)	2216	3.6	0.616 (0.374)	11.35 (2.24)	178 (81)	46 (8)	28.9 (97.8)

#### MAXIMUM POWER IN SELECTED GEARS

<b>4th(1 II)Gear</b>									
42.1 (31.4)	5980 (26.61)	2.64 (4.25)	2478	13.7	0.681 (0.414)	10.30 (2.03)	187 (86)	50 (10)	29.0 (98.3)
<b>5th(4 I) Gear</b>									
53.0 (39.5)	5775 (25.68)	3.44 (5.54)	2464	12.7	0.630 (0.383)	11.12 (2.19)	183 (84)	52 (11)	29.0 (98.3)
<b>6th(2 II) Gear</b>									
57.9 (43.2)	5730 (25.48)	3.79 (6.10)	2319	8.3	0.583 (0.355)	12.03 (2.37)	183 (84)	49 (9)	29.0 (98.3)
<b>7th(3 II) Gear</b>									
62.0 (46.2)	4545 (20.23)	5.12 (8.22)	2118	6.3	0.517 (0.315)	13.55 (2.67)	181 (83)	55 (13)	28.9 (97.9)
<b>8th(1 III) Gear</b>									
63.3 (47.2)	4255 (18.94)	5.58 (8.97)	2045	5.9	0.504 (0.307)	13.91 (2.74)	180 (82)	57 (14)	28.9 (97.9)
<b>9th(4 II) Gear</b>									
62.0 (46.2)	3340 (14.85)	6.96 (11.20)	1991	4.8	0.496 (0.302)	14.11 (2.78)	180 (82)	57 (14)	28.9 (97.9)

**REPAIRS AND ADJUSTMENTS:** No repairs or adjustments

**REMARKS:** All test results were determined from observed data obtained in accordance with official OECD test procedures. The performance results on this summary were taken from OECD tests conducted under the OECD Code 2 test procedure.

We, the undersigned, certify that this is a true summary of data from OECD Reports No. **2501** and **2503**, Nebraska summary 735, October 5, 2010.

Roger M. Hoy  
Director

M.F. Kocher  
D.R. Keshwani  
J.A. Smith  
Board of Tractor Test Engineers

## Famall 85U - 2WD

### TIRES AND WEIGHT

**Rear tires**—No., size, ply & psi (kPa)

**Front tires**—No., size, ply & psi (kPa)

**Height of drawbar**

**Static weight with operator**—Rear

— Front

— Total

### Tested without ballast

Two 600/65R34; \*\*, 12 (80)

Two 10:00-16; 8; 45 (310)

19.1 in (486 mm)

5445 lb (2470 kg)

2945 lb (1335 kg)

8390 lb (3805 kg)

**FARMALL 85U - FRONT WHEEL ASSIST**  
**(Unballasted - Front Drive Engaged)**  
**DRAWBAR PERFORMANCE**  
**FUEL CONSUMPTION CHARACTERISTICS**

Power Hp (kW)	Drawbar pull lbs (kN)	Speed mph (km/h)	Crank- shaft speed rpm	Slip %	Fuel Consumption		Temp. °F (°C)	Barom. inch Hg (kPa)	
					lb/hp.hr (kg/kW.h)	Hp.hr/gal (kW/h/l)	cool- ing med	Air dry bulb	
Maximum Power—6th (2 II) Gear									
57.3 (42.7)	5600 (24.90)	3.84 (6.17)	2297	5.1	0.585 (0.356)	11.98 (2.36)	183 (84)	69 (20)	28.9 (97.9)
75% of Pull at Maximum Power—6th (2 II) Gear									
46.9 (35.0)	4205 (18.70)	4.18 (6.74)	2460	3.8	0.694 (0.422)	10.10 (1.99)	183 (84)	61 (16)	28.9 (97.9)
50% of Pull at Maximum Power—6th (2 II) Gear									
31.4 (23.4)	2790 (12.40)	4.22 (6.79)	2478	2.8	0.822 (0.500)	8.53 (1.68)	183 (84)	61 (16)	28.9 (97.9)
75% of Pull at Reduced Engine Speed—7th (3 II) Gear									
46.8 (34.9)	4205 (18.70)	4.17 (6.72)	1702	3.7	0.511 (0.311)	13.71 (2.70)	176 (80)	59 (15)	28.9 (97.9)
50% of Pull at Reduced Engine Speed—7th (3 II) Gear									
31.4 (23.4)	2765 (12.30)	4.26 (6.85)	1711	2.7	0.575 (0.350)	12.18 (2.40)	177 (81)	61 (16)	28.9 (97.9)

**MAXIMUM POWER IN SELECTED GEARS**

35.7 (26.6)	8415 (37.43)	1.59 (2.56)	2475	15.4	2nd (2 I) Gear 0.753 (0.458)	9.30 (1.83)	189 (87)	57 (14)	29.1 (98.4)
51.2 (38.2)	8260 (36.73)	2.32 (3.74)	2457	13.8	3rd (3 I) Gear 0.664 (0.404)	10.56 (2.08)	189 (87)	55 (13)	29.1 (98.4)
55.8 (41.6)	8125 (36.15)	2.58 (4.14)	2377	11.4	4th (1 II) Gear 0.611 (0.372)	11.47 (2.26)	187 (86)	55 (13)	29.1 (98.4)
59.7 (44.5)	7320 (32.56)	3.06 (4.92)	2111	7.9	5th (4 I) Gear 0.546 (0.332)	12.84 (2.53)	181 (83)	63 (17)	29.1 (98.4)
60.3 (45.0)	6590 (29.32)	3.43 (5.53)	2057	6.5	6th (2 II) Gear 0.517 (0.315)	13.55 (2.67)	183 (84)	59 (15)	29.1 (98.4)
61.6 (45.9)	4565 (20.31)	5.06 (8.14)	2044	4.0	7th (3 II) Gear 0.506 (0.308)	13.86 (2.73)	178 (81)	64 (18)	29.1 (98.4)
62.8 (46.8)	4225 (18.79)	5.57 (8.97)	1998	3.7	8th (1 III) Gear 0.496 (0.302)	14.14 (2.79)	178 (81)	61 (16)	29.1 (98.4)
61.0 (45.5)	3360 (14.95)	6.81 (10.95)	1902	3.1	9th (4 II) Gear 0.501 (0.305)	14.00 (2.76)	180 (82)	59 (15)	29.1 (98.4)
58.6 (43.7)	2890 (12.85)	7.61 (12.25)	1858	2.7	10th (2 III) Gear 0.507 (0.308)	13.82 (2.72)	180 (82)	59 (15)	29.1 (98.4)

**Famall 85U - Front Wheel Assist**

**TIRES AND WEIGHT**

**Rear tires**—No., size, ply & psi (kPa)  
**Front tires**—No., size, ply & psi (kPa)  
**Height of drawbar**  
**Static weight with operator**—Rear  
— Front  
— Total

**Tested without ballast**

Two 600/65R34; \*\*, 12 (80)  
Two 480/65R24; \*\*, 12 (80)  
19.5 in (495 mm)  
5510 lb (2500 kg)  
3735 lb (1695 kg)  
9245 lb (4195 kg)

TRACTOR SOUND LEVEL WITH CAB	FWA dB(A)	2WD dB(A)
At no load in 6th (2 II) gear	80.2	80.2
Bystander	--	--

## HYDRAULIC PERFORMANCE

CATEGORY: II

Quick Attach: None

OECD Static test

Maximum force exerted through whole range:	4180 lbs (18.6 kN)
i) Sustained pressure with relief valve open:	2785 psi (192 bar)
ii) Pump delivery rate at minimum pressure:	17.4 GPM (66.0 l/min)
iii) Pump delivery rate at maximum	
hydraulic power:	16.0 GPM (60.7 l/min)
Delivery pressure:	2320 psi (160 bar)
Power:	21.7 hp (16.2 kW)

## HITCH DIMENSIONS AS TESTED—NO LOAD

	SAE TEST		OECD TEST	
	inch	mm	inch	mm
A	26.1	664	26.5	674
B	10.0	255	10.0	255
C	13.9	352	13.9	352
D	11.7	296	11.7	296
E	13.3	337	10.1	257
F	8.1	205	8.1	205
G	30.5	775	30.5	775
H	0.6	16	0.6	16
I	15.7	400	15.7	400
J	22.4	570	22.4	570
K	20.7	526	17.7	450
L	42.1	1070	42.1	1070
M	21.6	548	21.6	548
N	37.0	940	37.0	940
O	9.6	245	7.9	200
P	41.5	1053	46.5	1180
Q	42.1	1069	36.2	920
R	25.2	640	24.4	620

## THREE POINT HITCH PERFORMANCE (SAE Static Test)

Observed maximum pressure psi. (bar)	2900 (200)
Location:	remote outlets
Hydraulic oil temperature: °F (°C)	131 (55)
Location:	hydraulic sump
Category:	II
Quick attach:	none

System pressure 2610 psi (180 Bar)

Hitch point distance to ground level in. (mm)	9.7 (246)	16.5 (420)	22.4 (570)	28.3 (720)	36.2 (920)
Lift force on frame lb	9260	7935	7285	7170	6295
" " " " " " (kN)	(41.2)	(35.3)	(32.4)	(31.9)	(28.0)

